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OCT 23 1962

CURRENT SERIAL RECORDS

WATER SUPPLY OUTLOOK
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
for
OREGON

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE
and
OREGON AGRICULTURAL EXPERIMENT STATION
and
STATE ENGINEER of OREGON

Data included in this report were obtained by the agencies named above
in cooperation with other Federal, State and private organizations.

AS OF
OCT. 1, 1962

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Cooperative Snow Survey and Water Supply Forecast Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

| <u>REPORTS</u> | <u>ISSUED</u> | <u>LOCATION</u> | <u>COOPERATING WITH</u> |
|-------------------------------------|-------------------------------|------------------------|---|
| RIVER BASINS | | | |
| COLORADO AND STATE OF UTAH | MONTHLY (JAN.-JUNE) | SALT LAKE CITY, UTAH | UTAH STATE ENGINEER AND OTHER AGENCIES |
| COLUMBIA | MONTHLY (JAN.-MAY) | BOISE, IDAHO | IDAHO STATE RECLAMATION ENGINEER |
| UPPER MISSOURI AND STATE OF MONTANA | MONTHLY (FEB.-JUNE) | BOZEMAN, MONTANA | MONT. AGR. EXP. STATION |
| WEST-WIDE | OCT. 1, APR. 1, MAY 1 | PORTLAND, OREGON | ALL COOPERATORS |
| STATES | | | |
| ALASKA | MONTHLY (MAR.-MAY) | PALMER, ALASKA | ALASKA S.C.D. |
| ARIZONA | SEMI-MONTHLY (JAN.15 - APR.1) | PHOENIX, ARIZONA | SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION |
| COLORADO AND NEW MEXICO | MONTHLY (FEB.-MAY) | FORT COLLINS, COLORADO | COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER |
| IDAHO | MONTHLY (FEB.-MAY) | BOISE, IDAHO | IDAHO STATE RECLAMATION ENGINEER |
| NEVADA | MONTHLY (JAN.-MAY) | RENO, NEVADA | NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES DIVISION OF WATER RESOURCES |
| OREGON | MONTHLY (JAN.-JUNE) | PORTLAND, OREGON | ORE. AGR. EXP. STATION OREGON STATE ENGINEER |
| WASHINGTON | MONTHLY (FEB.-JUNE) | SPOKANE, WASHINGTON | WN. STATE DEPT. OF CONSERVATION |
| WYOMING | MONTHLY (FEB.-JUNE) | CASPER, WYOMING | WYOMING STATE ENGINEER |

Copies of these various reports may be secured from:

Head, Water Supply Forecasting Section
Soil Conservation Service
P.O. Box 4170, Portland 8, Oregon

PUBLISHED BY OTHER AGENCIES

| <u>REPORTS</u> | <u>ISSUED</u> | <u>AGENCY</u> |
|------------------|---------------------|---|
| BRITISH COLUMBIA | MONTHLY (FEB.-JUNE) | COMPTROLLER, WATER RIGHTS BR., DEPT. OF LANDS AND FORESTS, PARLIAMENT BLDG., VICTORIA, B.C., CANADA |
| CALIFORNIA | MONTHLY (FEB.-MAY) | CALIF. DEPT. OF WATER RESOURCES, SACRAMENTO, CALIF. |

WATER SUPPLY OUTLOOK
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
for
OREGON

ISSUED

OCTOBER 8, 1962

Report prepared by

W. T. FROST, Snow Survey Supervisor

and

BOB L. WHALEY, Assistant Snow Survey Supervisor

SOIL CONSERVATION SERVICE
209 S.W. 5TH AVE., PORTLAND 4, OREGON

Issued by

THOMAS P. HELSETH

STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE

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DIRECTOR
OREGON AGRICULTURAL
EXPERIMENT STATION

LEWIS A. STANLEY

STATE ENGINEER
STATE OF OREGON

WATER SUPPLY SUMMARY and OUTLOOK for OREGON

OCTOBER 1, 1962

Most Oregon irrigators had satisfactory water supplies in the 1962 season just closing. However, for many eastern Oregon areas the water supply was just barely sufficient to allow irrigators to "squeak through" without serious crop damage.

Outlook for water in the 1963 season is already dimmed by the low levels of water in many eastern Oregon reservoirs and the exceptionally dry watersheds which have still not been adequately "re-primed" since the drought conditions prevailing in 1959, 1960, and 1961.

This season some Eastern Oregon lands exhausted their water supplies shortly before or right near the end of the current irrigation season. These include some Umatilla County lands in the Westland District and Hudson Bay Company; some Burnt River lands above Unity reservoir; some John Day lands in the upper river area; some northern Malheur County lands; most Harney Basin lands in lower Silvies Valley and in Upper Silver Creek; and some Lake County lands near Silver Lake.

Adequate water supplies for next year are greatly dependent upon much above normal fall rains to prime "powder dry" watersheds plus a mountain snowpack considerably heavier than the average.

Details of the water supply picture for various Oregon regions are as follows:

Owyhee-Malheur Watersheds

Irrigation water supplies in Malheur County were mostly satisfactory in 1962, but, as predicted, were definitely "tight" for users served from Warm Springs, Agency Valley, and Malheur Lake reservoirs. Water users in both the Jordan Valley area and on the Owyhee Project finished the season with some carry-over water--172,500 acre feet in the big Owyhee reservoir and 2,600 acre feet in the enlarged Antelope reservoir in the Jordan area.

If average water supplies are to be available next season in Malheur County the currently dry watersheds will need to be "re-primed" by abundant fall rains previous to the accumulation of a heavy winter snowpack.

Burnt-Powder-Pine-Grande Ronde Watersheds

Most irrigators in Baker, Union and Wallowa Counties had satisfactory water supplies in 1962. However, the water supply was entirely "too tight" for those Burnt River users located upstream from the Unity reservoir.

Umatilla-Walla Walla-Willow-Rock-Lower John Day Watersheds

1962 irrigation water supplies in Umatilla, Morrow, and Gilliam Counties were downright "short" or very "tight" as was predicted last spring. Flow of the Walla Walla, the Umatilla, and McKay Creek has been somewhat lower than forecast. The Umatilla has produced about half of the average flow for the year. Underground water near Milton has been below average also. McKay reservoir, now empty, usually has a carry-over of about 13,500 acre feet for the following season.

Watersheds are exceptionally dry below the top 2 or 3 inches of recently wetted soils. Much above average fall precipitation and winter snowfall will be needed to produce average water supplies in 1963.

Upper John Day Watersheds

Most irrigators in Grant and Wheeler Counties had fairly satisfactory water supplies until late August when streamflow "fell off" generally and many diversions were cut off. Another cutoff occurred in mid-September. Exceptionally dry watersheds actually soaked up much more runoff water than was anticipated, resulting in streamflows that were close to 75 percent of average rather than 96 percent, which was forecast. John Day watersheds are still very dry.

Much above average fall precipitation and winter snowfall will be needed to produce average water supplies in 1963.

Upper Deschutes and Crooked Watersheds

1962 irrigation water supplies were satisfactory to all users in Crook, Jefferson and Deschutes Counties served from reservoir supplies. The water from the new Prineville reservoir, coupled with a nearly full supply in Ochoco, provided adequate water for all users. Carry-over supplies for next year are excellent.

Flow of the Deschutes River at Moody has been 93 percent average for the water year just ended. Wickiup and Crane Prairie reservoirs are a bit short of carry-over supplies but Crescent Lake is in fine shape. There may be some difficulty in filling Crane Prairie this next season.

Water users served by Tumalo and Squaw Creek had slightly more than the usual water supplies. Heavier than average fall rains and a big snowpack will be needed to assure good water supplies in 1963.

Hood-Mile Creeks-Lower Deschutes Watersheds

1962 water supplies were about average but became "tight" toward season's end on the smaller streams heading in lower elevations.

Adequate water for the 1963 season should be available if fall precipitation is above average and the snowpack is normal.

Willamette Watersheds

1962 irrigation water supplies were about normal for most users. However, streamflow was about 85 to 89 percent of average as compared with forecasts of 90 to 100 percent.

Rogue-Umpqua Watersheds

Irrigators generally had average water supplies. A few short streams heading in low elevations failed a bit earlier than average. Carry-over water in the reservoirs of the Talent and Medford Irrigation Districts is good to excellent, also reinforcing the outlook for the Rogue River Valley Irrigation District. It will quite probably be necessary to dump some water from Emigrant this winter.

Water year flow of the Umpqua and Rogue Rivers has been 89 and 78 percent respectively. Good fall rains and a fine buildup of the winter snowpack ought to ease minds of the water users for the 1963 season.

Klamath Watersheds

Although irrigation water supplies were adequate in Klamath Basin this year, 1962 flows were below estimates made last spring. A heavy spring snowpack was robbed by dry soil beneath and did not produce the runoff forecasted.

A normal season of irrigation in Klamath County in 1963 can be expected if above average fall rains precede the accumulation of a heavy winter snowpack. Watersheds are very dry and will require much priming for next season's runoff.

Lake County Watersheds

Irrigators in Lake County "squeezed by" in 1962 but with reservoirs now low, next season's water supplies must come as very heavy fall rains to prime the very dry watersheds, followed by an unusually heavy snowpack. The watersheds have generally not yet recovered from the drought conditions of 1959, 1960, and 1961.

Harney County Watersheds

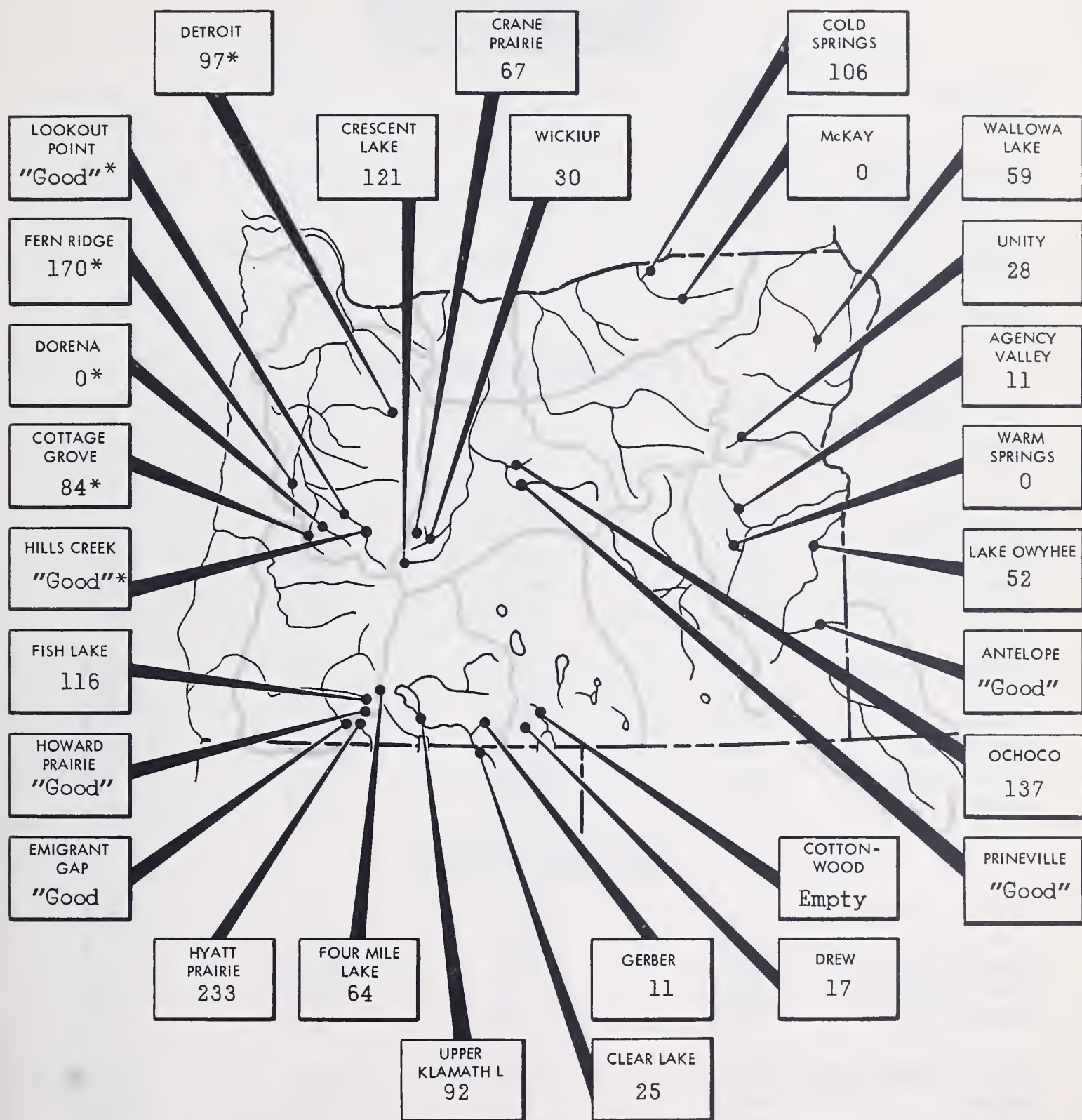
1962 was a poor irrigation season for many water users in Harney County. Lands in Silver Creek valley above the highway (North) and in lower Silvies Valley were especially hard hit this year. Streamflow in the southern end of the county was more nearly normal. Forecasts of streamflows of 100 percent or better did not prove out due to watershed soils absorbing far more water than anticipated and

due to the manner in which the snowpack melted off, permitting heavy evaporation.

The outlook for 1963 water supplies is not favorable at this time. All watersheds are extremely dry and will require much above average fall precipitation to re-prime them. The winter must bring on abnormally heavy snowpack to provide adequate water for runoff as the snow melts next spring and summer.

STORAGE STATUS of OREGON RESERVOIRS as percent of 1943-57, 15 year average

OCTOBER 1, 1962



* Multiple purpose reservoir - space reserved primarily for flood runoff.

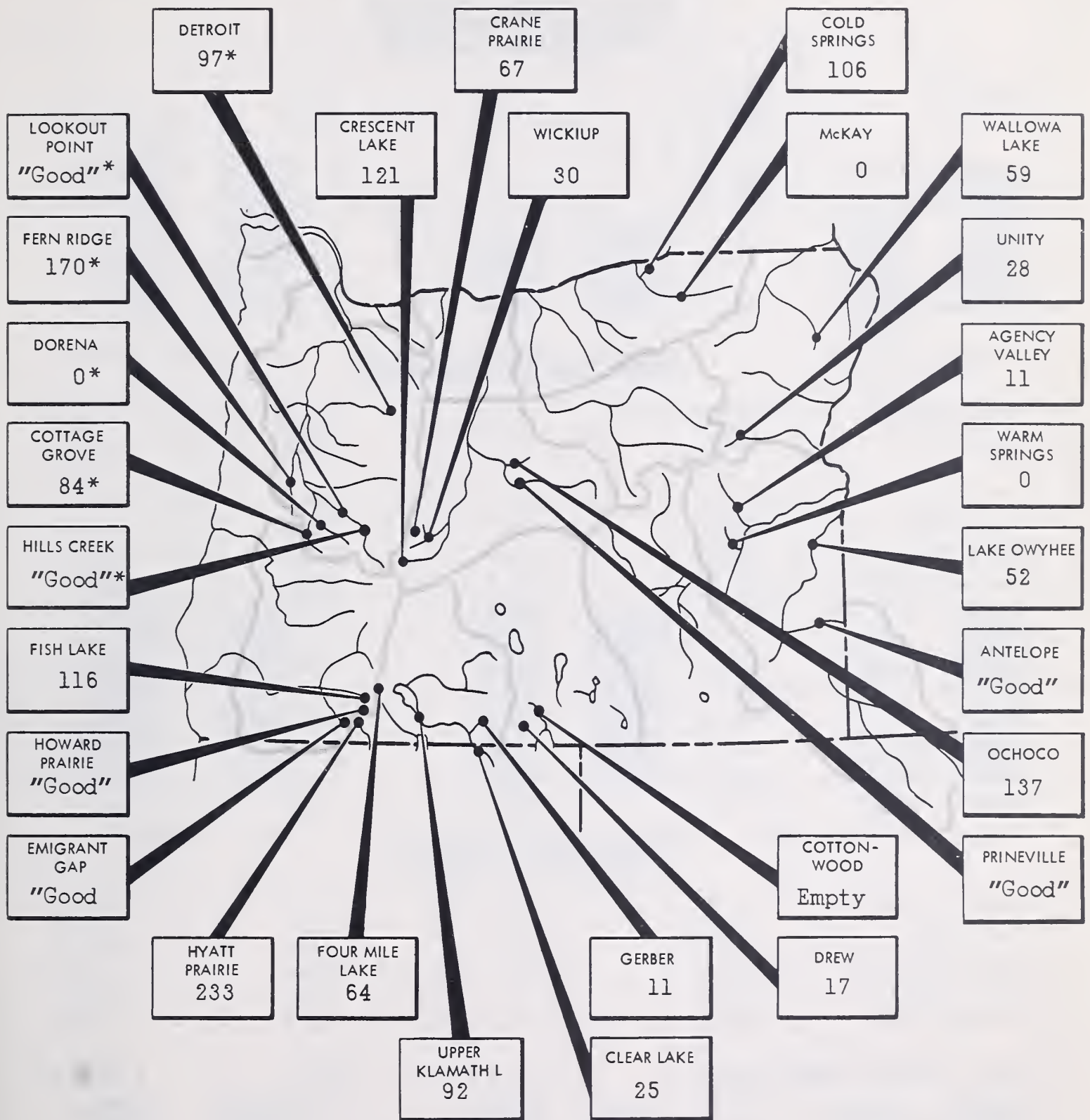
"Good" - Short record - no average for comparison

STATUS OF RESERVOIR STORAGE, OCTOBER 1, 1962

| RESERVOIR | USABLE | THOUSANDS ACRE FEET IN STORAGE ABOUT OCT. 1 | | |
|--------------------------------|---------------------------|---|-------|----------------------------|
| | CAPACITY (Thous. A.F.) | 1962 | 1961 | 15 year average 1943-57 |
| <u>UPPER COLUMBIA DRAINAGE</u> | | | | |
| <u>LOWER SNAKE IN OREGON</u> | | | | |
| Antelope | 55.0 | 2.6 | - - | - - |
| Owyhee | 715.0 | 172.5 | 30.5 | 331.8 |
| Agency Valley | 60.0 | 1.6 | 0.0 | 15.2 |
| Warm Springs | 191.0 | 0.4 | 0.0 | 43.2 |
| Unity | 25.2 | 1.0 | 0.6 | 3.6 |
| Wallowa Lake | 37.5 | 8.1 | 7.8 | 13.8 |
| <u>LOWER COLUMBIA DRAINAGE</u> | | | | |
| Cold Springs | 50.0 | 3.8 | 2.2 | 3.6 |
| McKay | 73.8 | 0.1 | 0.4 | 13.5 |
| Ochoco | 47.5 | 22.8 | 5.0 | 16.7 |
| Prineville | 153.0 | 118.5 | 93.1 | - - |
| Crane Prairie | 55.3 | 22.6 | 20.5 | 33.6 |
| Crescent Lake | 117.2 | 44.5 | 28.2 | 36.9 |
| Wickiup | 182.0 | 10.9 | 20.1 | 36.2 |
| Cottage Grove | 30.0 | 8.8 | 8.0 | 10.5 |
| Detroit | 299.9 | 188.7 | 189.6 | 195.0 |
| Dorena | 70.5 | 0.0 | 25.3 | 18.4 |
| Fern Ridge | 94.2 | 78.8 | 78.7 | 46.4 |
| Hills Creek | 249.0 | 138.4 | - - | - - |
| Lookout Point | 337.2 | 229.9 | 85.3 | - - |
| <u>WEST COAST DRAINAGE</u> | | | | |
| Fourmile Lake | 16.1 | 4.2 | 1.5 | 6.6 |
| Fish Lake | 7.8 | 2.2 | 2.2 | 1.9 |
| Howard Prairie | 60.0 | 32.5 | 21.5 | - - |
| Hyatt Prairie | 16.1 | 9.1 | 5.5 | 3.9 |
| Emigrant Gap | 39.0 | 13.8 | 8.4 | 0.2 |
| Upper Klamath Lake | 584.0 | 253.5 | 240.7 | 275.1 |
| Gerber | 94.0 | 3.2 | 0.6 | 29.0 |
| Clear Lake | 440.2 | 48.7 | 50.7 | 195.1 |
| Cottonwood | 4.1 | 0.0 | 0.0 | 0.0 |
| Drew | 63.0 | 5.1 | 0.4 | 29.1 |

STORAGE STATUS of OREGON RESERVOIRS as percent of 1943-57, 15 year average

OCTOBER 1, 1962



* Multiple purpose reservoir - space reserved primarily for flood runoff.

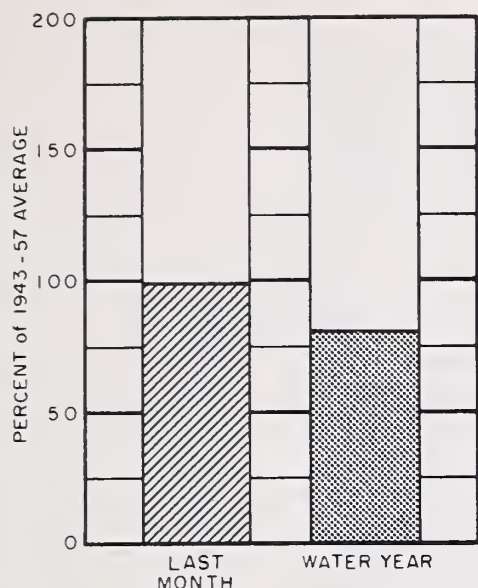
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STATUS OF RESERVOIR STORAGE, OCTOBER 1, 1962

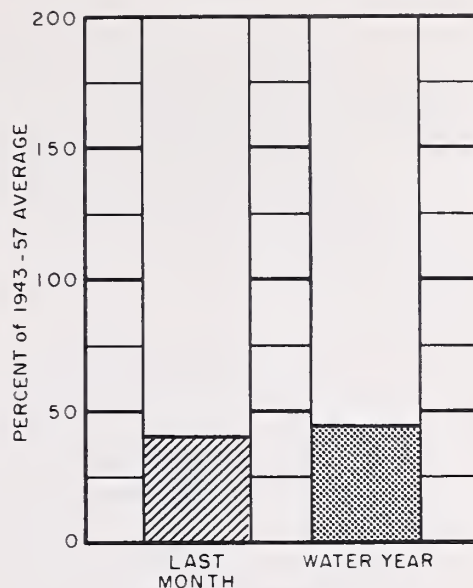
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CURRENT OREGON STREAMFLOW

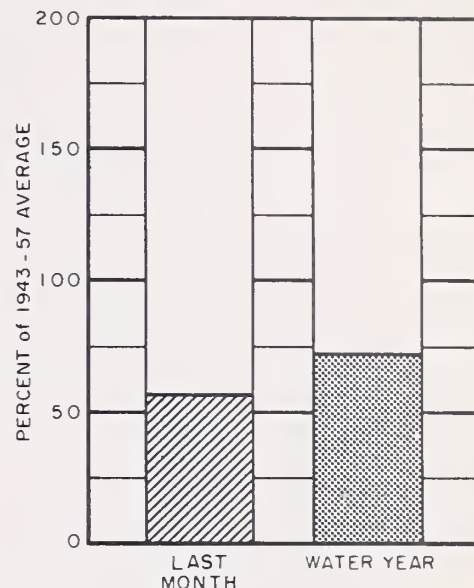
OCTOBER 1, 1962



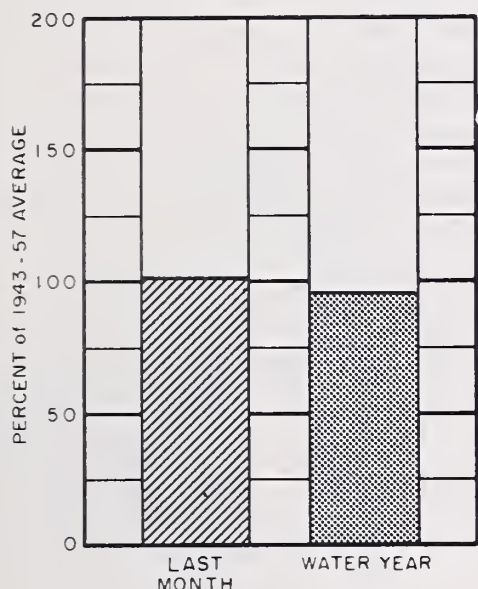
Owyhee Lake net inflow



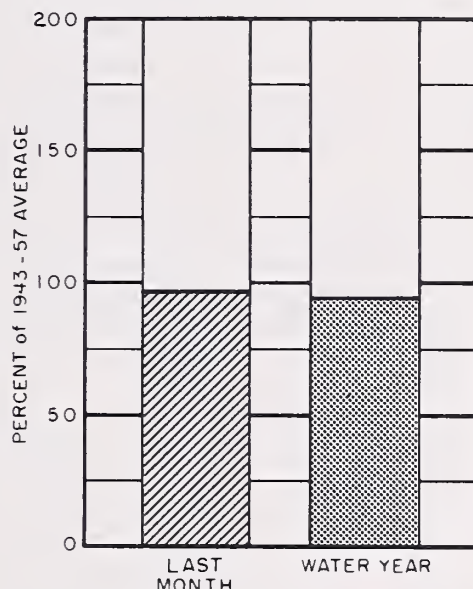
Umatilla near Umatilla



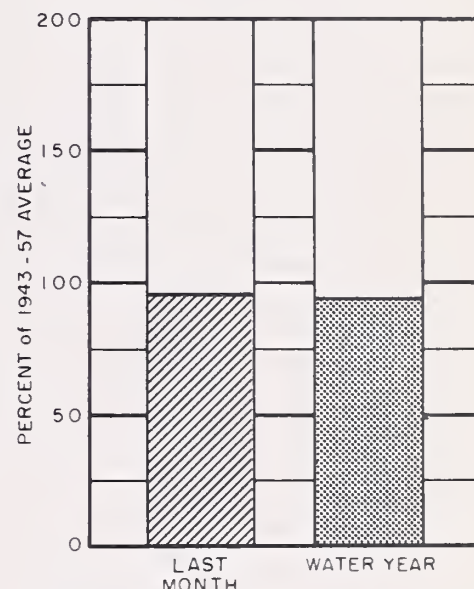
John Day at Service Creek



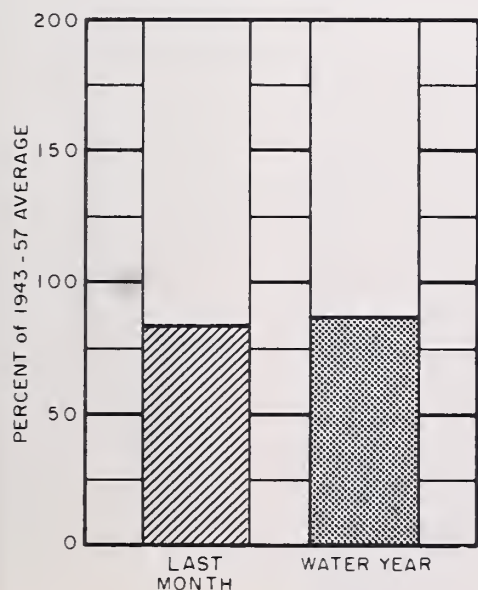
Deschutes at Moody



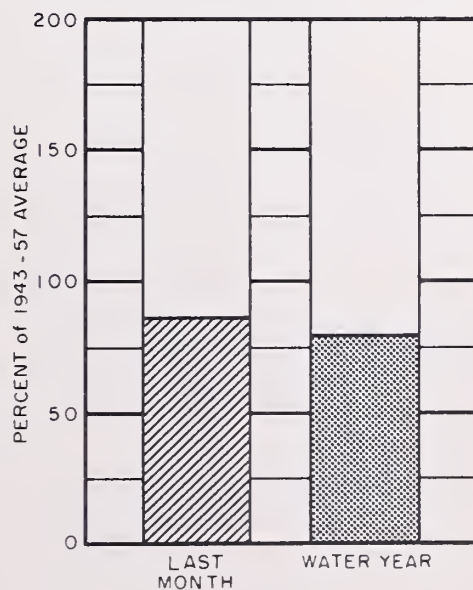
Hood and conduit near Hood River



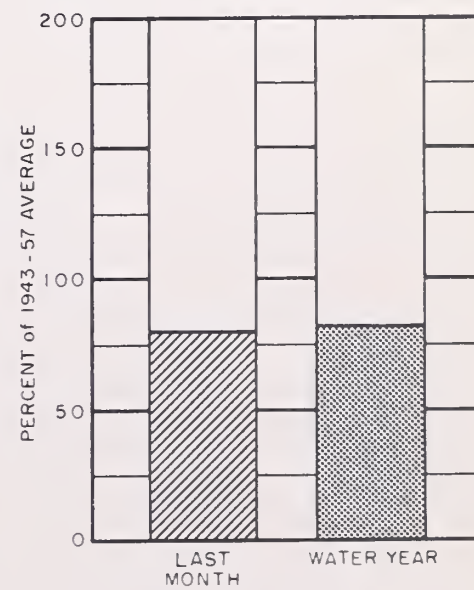
Mid. Fk. Willamette below No. Fk.



Umpqua near Elkton



Rogue at Raygold



Upper Klamath Lake net inflow

Data furnished by U.S. Geological Survey; The California Oregon Power Co.; and North and South Boards of Control Owyhee Project.

The Following Organizations Cooperate in the Oregon Snow Survey Work

STATE

- Idaho Cooperative Snow Surveys
- Nevada Cooperative Snow Surveys
- Oregon Agricultural Experiment Station
- Oregon State Engineer and Corps of State Watermasters
- Oregon State Highway Engineers
- Soil Conservation Districts of Oregon

COUNTY

- Douglas County Water Resources Survey

FEDERAL

- Department of Agriculture
 - Cooperative Extension Service
 - Forest Service
 - Soil Conservation Service
- Department of Commerce
 - Weather Bureau
- Department of the Interior
 - Bonneville Power Administration
 - Bureau of Land Management
 - Bureau of Reclamation
 - Fish and Wildlife Service
 - Geological Survey
 - National Park Service
- Department of National Defense
 - Corps of Army Engineers

PUBLIC UTILITIES

- California-Pacific Utilities Company
- Pacific Power and Light Company
- Portland General Electric Company
- The California Oregon Power Company

MUNICIPALITIES

- City of Baker
- City of La Grande
- City of The Dalles
- City of Walla Walla

IRRIGATION DISTRICTS

- Arnold Irrigation District
- Associated Ditch Companies
- Burnt River Irrigation District
- Central Oregon Irrigation District
- East Fork Irrigation District
- Grants Pass Irrigation District
- Jordan Valley Irrigation District
- Lakeview Water Users, Incorporated
- Medford Irrigation District
- North Board of Control - Owyhee Project
- North Unit Irrigation District
- Ochoco Irrigation District
- Rogue River Valley Irrigation District
- South Board of Control - Owyhee Project
- Squaw Creek Irrigation District
- Talent Irrigation District
- Tumalo Project
- Vale-Oregon Irrigation District
- Warm Springs Irrigation District

PRIVATE ORGANIZATIONS

- Amalgamated Sugar Company
- The Crag Rats, Hood River, Oregon

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